Marco

Product Guide
V5.3

Marco system specifications
Software description

Please contact your account manager or email marketing@quantel.com with any questions.

Marco

Overview

Marco is an SD/HD compressed field editor. Marco is supplied as software to be installed on a customer supplied PC. Marco enables journalists and editors to take the fast and easy to use Quantel editing toolset out of the office and with them on assignment.

Marco supports HDSDI/HDMI playback via the Thunderbolt connected AJA T-TAP so that broadcast quality video can be viewed or uplinked as required.

Marco uses Nvidia CUDA GPU processing to deliver maximum realtime performance and the comprehensive camera file format support allows instant access to media for editing - some of the supported formats are:

- XDCAM IMX 30/40/50 Mbit/s
- DV, DVCPRO, DVCPRO 50
- DVCPRO HD
- XDCAM HD 18/25/35/50 Mbit/s
- AVC-intra 50/100 Mbit/s
- GoPro Hero 2
- AVCHD with PCM audio
- MPEG2 HD 4:2:2 (JVC/Canon)

Marco can access and download media from Enterprise sQ systems via QTube over LAN and internet connections. When returning from the field it can deliver the results and rushes right back into the Enterprise sQ System via a LAN.

The thousands of journalists and editors who already use Quantel editors will find Marco instantly familiar: the GUI and toolset are exactly the same. For those new to the Quantel interface, it is simple and quick to learn, easy to use and includes all the editing and effects tools they will need. An Effects option provides sophisticated DVE, keying and color tools.

Key Features

- Runs on standard laptops
- Uses Nvidia CUDA GPU for great interactive performance
- Includes Edit and I/O modules. MLTFX and Mocha Tracker are optional
- **'One-shot' video fixing tools**: **Video correction**, **white balance**, **single**-point tracker, size/position as standard
- SDI video output via the AJA T-TAP
- Choice of on disk compression - AVCi 50 or 100, DVCPRO 100 for HD and DV, DVCPRO, IMX 30, 40 or 50 for SD
- Can retrieve media from any Enterprise sQ System via the integrated QTube Browser*
- Can deliver flattened MXF files to any Enterprise sQ System when connected to a LAN*

* Requires QTube Transformer

Marco System Specifications

Marco Minimum PC Spec

Processor

Intel Core i7 processor
3rd generation (Ivy Bridge) or 4th Generation (Haswell)
2.4GHz minimum clock speed, 6MB minimum cache

Memory

8GB DDR3 1600MHz minimum, 16GB preferred.

Graphics Card

Nvidia CUDA Graphics Card required
NVidia Quadro K1100M, GT750M, GT640M with 1GB of memory or better.

Display

1920 x 1080 or better for optimal viewing performance

Sound card

Windows 7 compatible sound card

Disk Drive

Use of a Solid State Disk Drive is recommended
Min size 500GB or 7200rpm 500GB Hard Drive with additional 2nd disk drive USB connected (see notes)

Ports & Interfaces

USB3 Ports recommended for external disk drive connections
Thunderbolt I/O port required for use with AJA T-TAP
http://www.aja.com/en/products/t-tap

Operating System

Windows 7 professional 64bit.

Quantel test Marco on HP ZBook and MacBook Pro laptops.

Notes on Marco Laptop Specification

Processor:

Intel Core i7 4th Generation (Haswell) or 3rd Generation (Ivy Bridge)

At the time of writing suitable CPUs are:
i7-4700MQ, 4700HQ, 4750HQ, 4800MQ, 4850HQ
i7-3630QM, 3720QM, 3740QM, 3820QM, 3840QM, 3920QM

Note: All 3 and 4 series processors that end in U (e.g. 3667**U**) are low power CPUs and are about half the speed of the recommended processors. These are **not** recommended for use with Marco software.

Memory:

Marco is a full 64bit application and makes extensive use of memory when rendering Multilayer Timelines. 8GB is the minimum, 16GB will improve performance.

Graphics:

An Nvidia CUDA Graphics card running the latest available Nvidia drivers is a requirement for smooth playback and efficient rendering of effects.
Any CUDA enabled graphics card will improve performance but the K1100M or GT750M or better are recommended for best performance.

Disk Drive:

The disk drive or drive(s) fitted ultimately govern the playback performance of the edit timeline. Use of an SSD is recommended for best performance. For use with a single disk drive a large fast SSD is essential.
If an SSD is not available it is necessary to configure Marco to utilise a second, USB connected, disk drive to hold the video workspace. This external drive can also be used to store native camera files such P2, XDCAM, GoPro, etc. in separate folders. In this configuration the System files and audio will be held on the internal drive. Splitting the audio and video partitions onto separate disks improves the playback performance.
USB2 connected drives are limited to a theoretical maximum performance of 480Mbps however this figure is rarely achieved in practice. USB2 restricts performance in scrub/shuttle and when previewing multi-layer timelines and is not recommended. USB3, now available on many disks and laptops, removes this restriction.
Use of the 'soft mount' facility within Marco to mount native files on USB connected media and edit directly from these on to the timeline is an efficient workflow that should be used where possible.

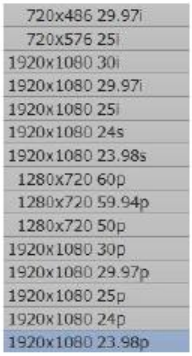
Drive Capacity:

Sufficient drive space is required to install and run the Marco software. A minimum of 8GB is recommended for the install and log usage. Marco also requires local storage to be assigned for both Video and Audio workspace.
24GB of space will provide storage for ~8hours of 4 channel and ~4hours of 8 channel audio. For video, 51GB will provide space for ~1 Hour of HD 100Mbit data and 2 Hours of SD IMX or DVCPRO50 data. 128GB will provide in excess of two hours of HD compressed Video storage.

AJA T-TAP Video Output Interface

SDI video output is available via the AJA T-TAP. The T-TAP requires a Thunderbolt interface on the host PC. More details can be found here http://www.aja.com/en/products/t-tap

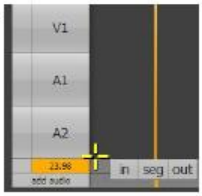
HDMI and 10 bit SDI with up to 8 channels of embedded audio are supported in the formats shown.



The recommended T-TAP driver is supplied with the Marco software here:
C:\Data\Marco S5.3 rev 5.035\DLL_Data\Quantel\AVIO3PCardDriver
Please read the T-TAP section in the readme.txt file in this directory to identify the correct driver to be used.

Windows Bootcamp on a MacBook Pro will not recognise the T-TAP if plugged in whilst Windows is running. You must do a restart.
So always make sure the T-TAP is plugged in before starting up.

Note: Any non-broadcast framerate timeline is highlighted orange as a warning.



Supported Video output formats via the AJA T-TAP

Format Parameters			Video Interface Support	
Size	**Framerate**	**422**	**SDI**	**HDMI**
SD	25, 29.97	422	✓	✓
HD 720	50, 59.94, 60	422	✓	✓
HD 1080	23.98, 24, 25, 29.97, 30	422	✓	✓
			✓	✓

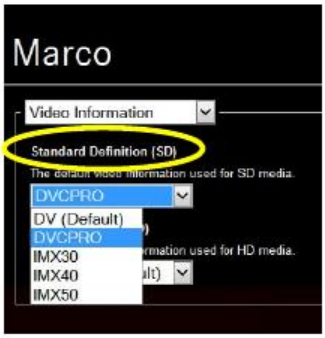
Notes:
At the time of writing (Nov 13) under Windows Bootcamp on a MacBook Pro only Thunderbolt 1 is supported. Thunderbolt 2 is not supported under Windows Bootcamp. This is believed to be an Apple Bootcamp issue which it is hoped will be addressed shortly.

Support for the AJA Io-XT will be added in a future release.

Performance

- There are 3 major factors that influence system performance. CPU, GPU and disk speed.
  As previously discussed the best laptop disk speed performance will be achieved by using an SSD. The disk performance combined with the CUDA GPU processing defines the realtime playback capabilities.
  CPU performance is important when soft mounting certain files types such as MXF XAVC, MXF XDCAM and RED. The CPU is used to decode the essence. Disk bandwidth is also important when soft mounting files to provide the compressed data in a timely fashion to the CPU.

- Depending on the source resolution all media is stored on disk at HD (1920x1080, 1280x720) or SD (720x576, 720x486) in the compression format selected in the Settings menu.

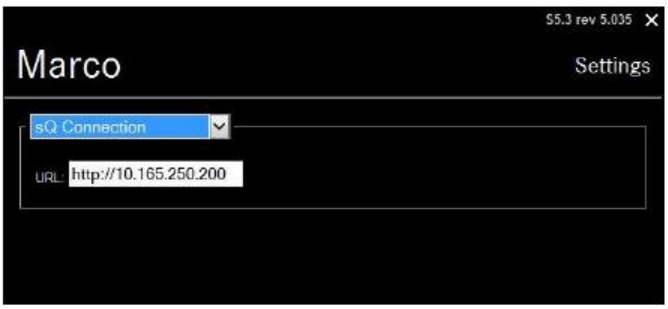


For certain formats such as MXF files where the essence is stored using AVCi, DV, IMX etc. then when imported the media will be stored in its native compression format without any transcoding.

Note: 720P 50/60 is not compatible with encoding to the DVCPRO 100 storage settings; so if working with 720P material then please select the HD video storage to be AVCi 50/100

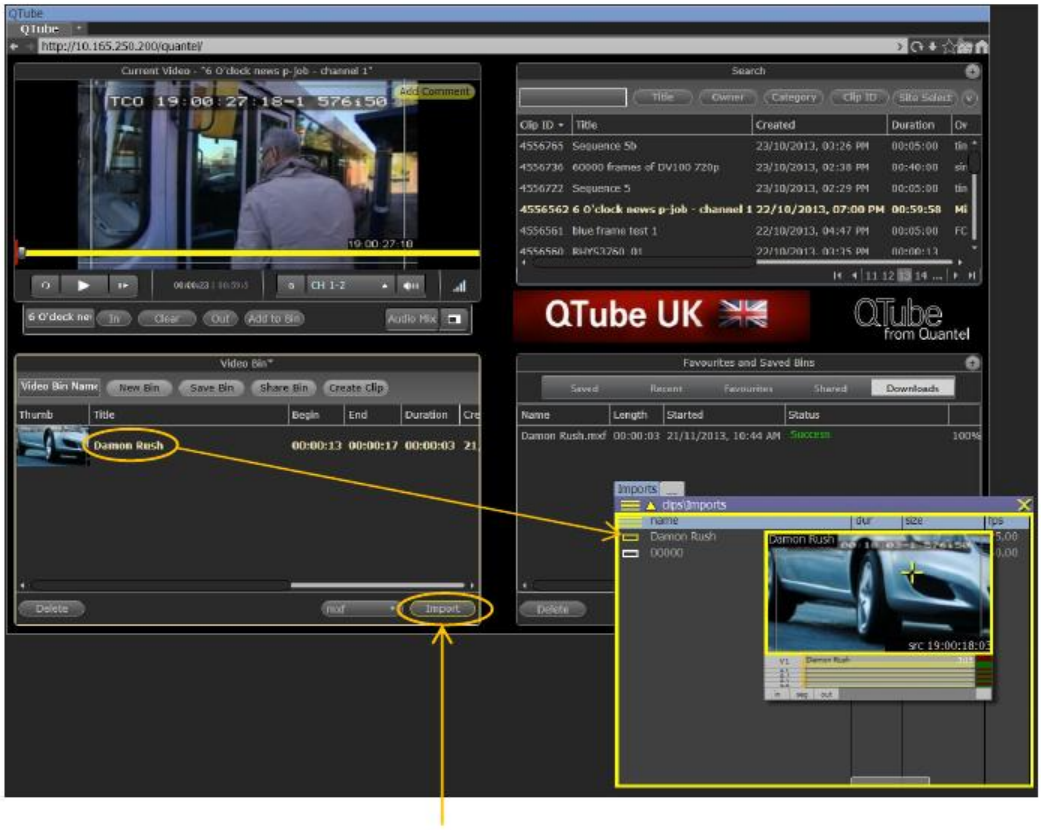
Connecting to an Enterprise sQ System

Marco can be connected to an Enterprise sQ System via a QTube Transformer.
The IP address of the QTube Transformer needs to be setup in the Marco settings bin as shown in the example below. This QTube Transformer needs to be running V5.3 rev 5 software or later.



Retrieving media using the integrated QTube Browser

Marco can retrieve and work with media from the Enterprise sQ system by using Web Tools to access the QTube Browser.



Using the QTube Browser select the clip or subclip and add it to the Video Bin. Pressing the Import button will download the clip and automatically soft mount it into the clips library.
The clip is downloaded into the My Documents folder and can be used when Marco is disconnected from the network and taken on the road.

Note:

If MXF is selected as the file format then the clip will be soft mounted in the library immediately – whilst the download to My Documents is still in progress.

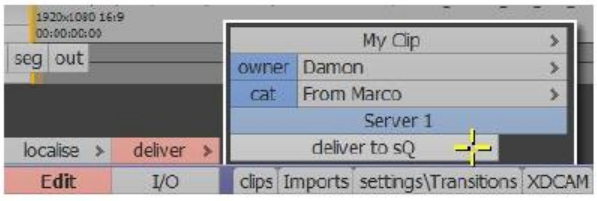
If MOV is selected then the clip will only be soft mounted in the library once the file has finished downloading into the My Documents folder.

Sending media to the server using Deliver to sQ

Clips on the timeline can be sent as flattened MXF files into any Enterprise sQ System via a QTube Transformer by selecting the required publish area and clicking on deliver to sQ as shown. The publish areas are set up in the sQ ISA manager.

Note:

The clip must be rendered first and on a timeline with the same framerate as the server*.

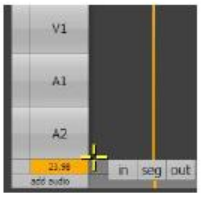


*As Marco natively supports 720P 50 and 59.94 timelines it is possible to deliver these to a 25 and 29.97 fps server interleaving the frames as part of the process.

The supported frame rates on the timeline for delivery to an Enterprise sQ System are shown in the table below.

	Source Frame Rates Supported			
Server Frame Rates	25	29.97	50	59.94
25 / 50	✓	x	✓	x
29.97 / 59.94	x	✓	x	✓

Note:
Non-broadcast frame rates are highlighted orange on the timeline and cannot be delivered to an Enterprise sQ System in this manner.



Marco Options

495-113 MLTFX

- Add multiple effects to clips on the timeline
- Effects include dve, colour, keyer, blur, graphics, text and plugins
- Add multiple processes with gestural reordering when required
- Colour effects include still store, storyboard, multiple cascade colour layers, ranges control, revolver, fettle, printer lights, selective keyer, shape selectives, Inside/Outside grading and all are able to be driven via a mouse.
- Colour includes the ability to create and burn in 3D Cubes
- Effects grouping available for all modules

Full details on page 11

495-141 Mocha Tracker (Option 495-113 is a pre-requisite)

This option adds the Imagineer Mocha area tracker to the MLTFX toolset. The Mocha tracker is available in addition to the standard Quantel Point based tracker.

The Mocha tracker engine is designed to track an area as determined by the active shape from any effects module or as defined from within the tracker itself. The Mocha tracker has many uses with the most common being for defining and tracking an area for colour correction. It differs from the point based tracker in that the whole area bounded by all the points is the area of tracking interest, rather than simply the points and their target areas.

Software specification

The Marco software is modular. Each module is accessed from the edit desk or via task bar at the bottom of the User interface.

Library

- Project-based or flat file library stores rushes, edits, packs, settings and clip metadata
- Fixed or floating library
- Technical metadata includes resolution, bit depth, scan, colorspace, pixel aspect ratio, reference black/white levels, source timecode, keycode, render state and many more
- User metadata includes project, originator, name, description and owner
- User defined clip colours in the library
- User defined library view including any or all fields in any order
- Fast search or sort on any field
- Unlimited user defined bins based on folders or search results
- Display entries as text, thumbnail or both
- Browse, scroll and play clips directly in the library
- Edit from library
- Nested folders for easy project organisation
- Define folder to store new material
- Modify clip attributes in the library
- Graphical indication of clip, rush, edit, stereo clip, clip with key or setting
- Graphical display of effects settings with thumbnail image
- Auto select of relevant settings, DVE, key, colour etc., when in MLTFX*
- Drag settings directly from library onto any track in MLTFX*
- Unique file ID prevents accidental overwrite
- FrameMagic™ allows instant and safe deletion of material to free up disk space without needing to consolidate
- Analyse Space – will show the percentage of local workspace any clip or folder will free up if deleted

Edit

- Multilayer Resolution Co-existence™ timeline
- Freely mix resolutions (soft mount) on the timeline without rendering
- Timeline, picture or storyboard editing with cuts, wipes, dissolves
- Support for effects templating. Templates need to have been created in sQEdit or Qube
- Gestural or keyboard based editing
- Matchframe for quickly finding the original source material from an edited clip, even with stretched clips
- Soft mount on timeline RED, DPX, TIFF, CIN, MXF-wrapped DNxHD, Sony F65, SStP, XAVC, Go Pro MP4, P2, Quicktime ProRes, ARRI RAW, Canon RAW, Cinema DNG and XDCAMHD formats
- Soft mounted raw media always has the decode live and adjustable on the timeline
- Localise soft mounted media (if required) via the timeline, desktop or clips library
- Frame accurate editing at 23.98, 24, 25, 29.97,30, 50, 59.94, 60 fps with appropriate timecode. Non broadcast frame rates are highlighted orange on the time line.

- View either source or destination timecode, or frame count
- Multi-level undo and redo
- Video and audio Fit to Fill editing
- Insert, replace and swap edit modes
- Visual and numeric single and multi-shot trimming
- Complex trim across multiple tracks and layers
- Extend edit to current position
- Segment highlights for easier identification and navigation
- Fully automatic management of tail frames with visible indication of tails and duration
- Automatic unlimited extend of repeated frames
- Audio video sync display with lock sync trim mode
- Industry standard keyboard shortcuts
- Linear or profile video speed changes in timeline or on Desktop
- Apply custom transitions designed in Effects Module that use any effect tool including plug-ins
- Uncommitted edits and transitions
- Multi-resolution commit of edits
- Flatten multilayer timelines with a top down view
- Segment out with or without tails
- Auto rebuild of transitions after trim or effects changes
- Auto rebuild of transitions for different aspect ratio version
- Split edits into their component rushes with or without tails
- Desktop scene detect

Audio Editing

- Multi-channel audio editing
- Mono, stereo or four audio channels per timeline track
- Audio waveform display (local workspace only) in with subframe accurate transitions editing
- Digital or analogue style audio scrubbing
- Graphical insert and manipulation of crossfades
- Independent control of out and in fade duration and timing
- Track or segment level control with keyframing and dynamic rubber banding
- 3 band parametric eQ with graphical display
- Audio compression
- Live audio output during level, eQ or compression adjustment
- Flexible mix-down options including track assign and pan for playout
- Voice over record
- Audio loudness monitoring (requires the VisLM VST plugin from NUGEN)

I/O and Conform

- All imported sizes greater than HD are resized and stored on disk as HD
- AVCHD import with PCM audio Note: Does not currently support Dolby AC3 audio
- 10 or 8 bit compressed storage on disk
- Render on export – no need to render to local workspace to do deliverables
- Export to avi, cin, dpx, jpg, mov, mpg, mxf (includes DNxHD), SStP, XDCAM, P2, exr, png, sgi, tga, tif, tiff, vpb, wav, wma, wmv file formats
- Support for soft mount of RED, DPX, TIFF, CIN, MXF-wrapped DNxHD, SStP, XAVC, GoPro MP4, P2, Quicktime ProRes, ARRI RAW, Canon RAW, Cinema DNG and XDCAM HD formats

- Resize on export, source size extraction and crops on export, burn in 3D luts on export
- Choice of box or cut on export based on first frame of the sequence
- Import media from any Enterprise sQ System using the integrated QTube Browser (requires QTube Transformer)
- User defined Black/White levels on export
- User defined export menu settings (entire export menu snapshot) that can be saved and restored
- Export settings with thumbnail images to transfer to another Quantel system
- QXMLnet utilities allow access to and from Quantel workspace via a scriptable interface
- Direct import of single frames onto desktop with duration setting
- Publish AAF projects to audio post (ProTools) with essence, metadata and video reference file
- Add/Remove or Ignore of underscores from file sequences on import and export
- Export Naming can set an appended name or number to a file sequence (padding)
- Can use names and dots as separators and/or start sequences at any number
- Audio channel mapping control on input
- Build AAF and EDL of timeline
- Direct import of single frames onto desktop with duration setting
- Background import/export of file media via windows networking protocols.
- Batch import and export
- Compatible with SAN client software and FC HBA (not supplied)
- Archive everything from complete project to individual shots or settings with full, new and minimum options
- Soft mount archive – archives can be viewed across a network and selectively restored.
- Archives can also be placed directly to the clips bin and timeline for editorial and effect changes
- Deliver to sQ – send a flattened MXF file directly to any Enterprise sQ System connected to a LAN (requires QTube Transformer)

MLTFX *(option)

- Pre-visualise multiple effects on a timeline
- Process effects include dve, color, keyer, blur, graphics, text and plugins
- Multiple layer blend modes including additive, subtractive, XOR and multiply
- Add multiple processes with gestural reordering where required
- High quality Quantel plug-ins – Anaglyph, Blend, Blur, Crash Zoom, Directional Blur, Dissolve, filters, Glass Tile, Kaleidoscope, Lens Flare, Magic Crystal, Mesh Warp, Mosaic, Nova, Ripple, Trail, Transition, Water Distortion, Wave, Whirl Pinch and Wind
- Over a thousand 3rd party plugins available
- In context grading across multi-layer timeline
- Colour effects include still store, storyboard, multiple cascade colour layers, ranges control, revolver, fettle, printer lights, selective keyer, shape selectives, Inside/Outside grading and all are able to be driven via a mouse, pen, Neo or Neo Nano control surfaces
- Colour includes the ability to create and burn in 3D Cubes (LUTS)
- Effects grouping available for all modules
- Point and Mocha(optional) area based tracker, including stabilisation
- Hierarchy of segment, track, and clips effects including dve, key, colour, blur, text and plugins
- Timeline shows clips with effects history

- Real-time previews for reviewing changes
- Keyframes display for each segment locked to MLT zoom
- Keyframe Processes (simplify, densify, smooth, add noise, jitter, quantise, slide, de-extrapolate)
- Keyframe controller (constant, cycle, offset cycle, oscillate, directed)
- Flexible keyframe scaling when trimming
- Keyframes visible in tails
- Tails always available even in rendered history
- All dve numerical values are keyframeable, e.g. keyframeable soft-edged crops
- Text generation can be used as a key in blur and colour
- Enhanced gestural track/layer management
- Solo/Mute individual layers
- Add/Delete key via the timeline

Primary Color Correction*

- Primary colour correction control of hue, saturation, lift, gamma and gain
- Master and individual channel controls
- S-Curve and pivot points for Master and separate R,G and B
- Separate differential controls for shadows, midtones and highlights
- Simple range (sim range) control where lift controls the shadows, gamma controls the midtones and gain controls the highlight regions
- All range controls (sim range, shadow, midtone and highlight) can be used in conjunction with one another and the master controls
- Hicon view of shadow, midtone and highlight areas
- Apply optional 3rd party plugins in creative grading sessions
- Red, Green, Blue and Density Printer Light controls with 0.25 point increments
- 9 editable fettle curves, working in RGB,YUV or HSL for complete colour control
- Colorpoint identifies image colours on graphs
- Cascade primary grades to simplify multi-shot grading
- Nullcast/balance for auto-colour balance
- Easy to use inside/outside grading operations
- Linear and logarithmic operation

Secondary Color Correction*

- Unlimited cascaded secondary colour corrections
- Blend modes and opacity available on every cascade
- Plugins available on every cascade both inside and outside a key or a shape
- Revolver HSL-based secondary **color corrector**, **multiple simultaneous 'in-picture'** modifications (barrels)
- Select input hue and modify output hue, saturation and luminance.
- 12 Revolver presets
- Blur, shrink and grow selective area
- Freehand or graphic shape selection with unlimited shapes per cascade
- Variable shape softness (Matinee) for inside and outside the shape
- Manually keyframe or apply tracks to animate shapes
- Mocha tracking (optional) - draw a shape and then track
- Group shapes for fast and easy animation
- Individual softness and group softness controls

- Sophisticated shape editing with rotate, scale, point tangents and tension
- Aperture - defocus or sharpen the selected image, key or shape area. Includes separate RGB channel control
- Independent cascade input and hole-cut selection for each cascade – derive key from any layer
- Name cascade layers for easy management
- Enable/disable individual cascades for quick before/after comparisons
- Common tools for primary and secondary grading

Grade Management*

- Preview and transfer grades from shot to shot using Still Store, Storyboards or Settings Bin
- Auto-update of reel view when grade changes
- Unlimited reference frames with wipe and rotate split-screen comparison. Transfer grades from reference frames
- Enhanced Reference Frame and Storyboard display that shows both at the same time
- Powerful Group Grade in Effects allows shots to be graded via Originator, Source Timecode, selected Range or manual selection
- Save grades to Storyboard or library with thumbnail image
- Timeline indicator to show Storyboard range displayed
- Up to 6 extra Storyboards can be created and easily switched between and deleted
- Export grade settings with thumbnails to external pen drive or hard drive for easy transfer between systems
- Transfer all or partial settings
- Color Trim in Effects within a selected group. Actively Trim the entire group by the same amount
- Full transition handling with auto-rebuild of transitions after grade changes
- Easily store multiple versions of grades for reference comparison

*** Included in the MLT FX option**

Appendix

Licensing NUGEN VisLM loudness meter

A license is required to run the NUGEN VisLM. Quantel customers should purchase licenses direct from NUGEN Audio by either:

a) Purchasing the product from their online shop, clicking the hot-link within NUGEN VisLM itself.
b) Making a purchase from an authorised reseller.

Any support or licensing issues relating to NUGEN VisLM should be directed to NUGEN customer support:

http://www.nugenaudio.com/support.php
http://nugenaudio.com/licensing.php
or by emailing support@NUGENaudio.com